

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Japp *et al.*

Examiner: Nordmeyer, Patricia L.

Serial No.: 10/691,882

Group Art Unit: 1772

Filed: 10/23/2003

Docket No.: **END920000150US2**

Title: **DRILL STACK FORMATION**

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**BRIEF OF APPELLANT**

This Appeal Brief, pursuant to the Notice of Appeal filed November 3, 2006, is an appeal from the rejection of the Examiner in the Office Action dated August 3, 2006.

**REAL PARTY IN INTEREST**

International Business Machines, Inc. is the real party in interest.

**RELATED APPEALS AND INTERFERENCES**

None.

**STATUS OF CLAIMS**

Claims 2-13, 17, 32, 34-37 and 40-43 are rejected. Claims 1, 14-16, 18-31, 33, and 38-39 are canceled. This Brief is in support of an appeal from the rejection of claims 2-13, 17, 32, 34-37 and 40-43.

**STATUS OF AMENDMENTS**

There are no After-Final Amendments which have not been entered.

## SUMMARY OF CLAIMED SUBJECT MATTER

### A. CLAIM 4 - INDEPENDENT

The present invention provides a structure, comprising: a stack (12D) of two or more sheets (14), a first surface of a first layer (18A), and a first surface of a second layer (18B). Successive sheets in each pair of successive sheets of the stack are adhesively coupled to each other by an adhesive layer consisting of a removable adhesive (16). The adhesive layer is in direct mechanical contact with the successive sheets in each pair. The removable adhesive is also disposed on top and bottom surfaces of the stack. The first surface of the first layer is coupled with the removable adhesive to a first surface of the stack. The first surface of the second layer is coupled with the removable adhesive to a second surface of the stack. See FIG. 2; specification, page 5, lines 13-20.

The removable adhesive consists of a liquid while adhesively coupling the successive sheets to each other. See specification, page 5, lines 8-12.

The first and second layers are adapted to prevent burr formation in a hole subsequently drilled through the stack. See specification, page 8, lines 19-21.

### B. CLAIM 17 - INDEPENDENT

The present invention provides a structure, comprising a plurality of stacks (12C, 12D, 12E, 12F). Each stack and its adjacent stack of the plurality of stacks are both coupled with a

removable adhesive (16) to an intermediate layer (18B, 18C, 18D) therebetween. Each stack comprises a plurality of sheets (14) such that each sheet and its adjacent sheet of the plurality of sheets are adhesively coupled to each other with an adhesive layer consisting of the removable adhesive. The adhesive layer is in direct mechanical contact with said each sheet and its adjacent sheet. See FIG. 2; specification, page 5, lines 13-20.

The removable adhesive consists of a liquid while adhesively coupling said each sheet with its adjacent sheet. See specification, page 5, lines 8-12.

Each intermediate layer is adapted to prevent burr formation in a hole subsequently drilled through the stack. See specification, page 8, lines 19-21.

#### **GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

1. Claims 2-13, 17, 32, 34-37 and 40-43 stand rejected under 35 U.S.C. § 101.
2. Claims 2-13, 17, 32, 34-37 and 40-43 stand rejected under 35 U.S.C. § 112, first paragraph.

## ARGUMENT

### GROUND OF REJECTION 1

Claims 2-13, 17, 32, 34-37 and 40-43 stand rejected under 35 U.S.C. § 101. The Examiner alleges that “the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.”

The Examiner argues: “Claims 4 and 17 have been amended to contain the language “the removable adhesive consists of a liquid while adhesive coupling the successive sheets to each other”. There is no support in the specification to show how the adhesive functions as a liquid and how the liquid adhesive stays in place in between the sheets. The specification is silent with regard to how the liquid adhesive is placed in between the sheets of material and how it is removed once the holes are drilled. In paragraph 0042 of the Applicant's specification, the removal of the other types of adhesive is discussed, but the liquid adhesive is not mentioned”.

In response to the preceding argument by the Examiner, Appellants cite page 1, lines 8-13 of Appellants’ specification for the following indication of problems with the prior art: “A stack of sheets may be adhered together around a periphery of each sheet using an adhesive such as a glass cloth impregnated with epoxy. **Hole burring** occurs as a drill passes through the stack. Additionally, **each sheet separates** from an adjacent sheet as the drill passes between the sheets. This results in the whole stack of sheets expanding” (emphasis added).

Appellants argue next that the invention of claims 4 and 17 has the utility of overcoming the aforementioned problems of the prior art.

A first argument by Appellants relates to the invention of claims 4 and 17 having the utility of preventing sheet separation as the drill passes through the stack. Appellants' specification recites on page 11, cols. 13-20 that "the removable adhesive 16A-16K may comprise a thin layer of water. The **surface tension** of the thin layer of water between each sheet 14A-14L of the laminated structure 10A holds the laminated structure 10A together while the hole 102 is drilled. Each sheet 14A-14L is **peeled off** the laminated structure 10A and rinsed in additional water to remove any material particles. Then, each sheet 14A-14L is dried." (emphasis added)

The preceding quote from Appellants' specification indicates that the invention of claims 4 and 17 have the utility of **each sheet not separating** from an adjacent sheet as the drill passes between the sheets, in contrast with the prior art.

In addition, the preceding quote from Appellants' specification states that the **surface tension** of the thin layer of water holds the sheets together, which overcomes the Examiner's allegation that "[t]here is no support in the specification to show how ... the liquid adhesive stays in place in between the sheets.

In addition, Appellants respectfully contend that the issue of how the liquid adhesive is removed once the holes are drilled is irrelevant to the aforementioned utility, because the utility of each sheet not separating from an adjacent sheet as the drill passes between the sheets will be achieved by the invention of claims 4 and 17 even if the liquid adhesive is not removed once the holes are drilled. Nonetheless, the preceding quote from Appellants' specification states that the sheets are **peeled off** the laminated structure, which overcomes the Examiner's allegation that

“[t]he specification is silent with regard to how the liquid adhesive ... is removed once the holes are drilled.

Appellants assert that the Examiner’s allegation that “[t]he specification is silent with regard to how the liquid adhesive is placed in between the sheets of material” is irrelevant to the aforementioned utility, because claims 14 is a structure claim and is not claiming a method step of placing the liquid adhesive in between the sheets of material. Nonetheless, Appellants’ specification on page 5, lines 5-12 states that the adhesive is placed between the sheets of material by being “applied” between the sheets, wherein the adhesive may be liquid (“A removable adhesive 16A-16K is **applied** between each sheet 14A-14L, respectively.... The removable adhesive 16A-16K may comprise any suitable material (e.g., fructose, sucrose, water soluble polymers, water, etc.). The material may comprise any suitable form (e.g., powered fructose, **a liquid**, a liquid solution, etc.)” (emphasis added).

Appellants assert that the Examiner’s allegation that “[t]here is no support in the specification to show how the adhesive functions as a liquid” is unclear and confusing, since claims 4 and 17 do not recite that the adhesive must function as a liquid. Claims 4 and 17 state that the adhesive is a liquid that must function as an adhesive.

A second argument by Appellants relates to the invention of claims 4 and 17 having the utility of **preventing burr formation** as the drill passes through the stack. The preceding utility of preventing burr formation is specifically recited in claims 4 and 17 as follows:

“wherein the first and second layers are adapted to prevent burr formation in a hole

subsequently drilled through the stack” (claim 4); and

“ wherein each intermediate layer is adapted to prevent burr formation in a hole subsequently drilled through the stack” (claim 17).

Appellants note that the utility of preventing burr formation does not depend on the removable adhesive consisting of a liquid. The flow chart of FIG. 7 depicts the process of the present invention for producing a burr free hole any removable adhesive stated in the Appellants’ specification. See specification, page 8, line 19 - page 9, line 6 (“FIG. 7 illustrates a flow chart of a method for producing a burr free hole 102 in each sheet 14 of the stack 12B (FIGS. 5 and 6).... As mentioned above, the removable adhesive 16 may comprise any suitable material (e.g., fructose, sucrose, water soluble polymers, water, water solutions, etc.).”

The Examiner has associated lack of utility of claims 4 and 17 with the fact that claims 4 and 17, as amended in the immediately preceding office action response, require that the removable adhesive consist of a liquid. However, since the specification indicates that the utility of preventing burr formation does not depend on the removable adhesive consisting of a liquid, the Examiner’s basis for introducing the lack of utility rejection under 35 U.S.C. § 101 in the current office action, as a consequence of Appellants’ amendment in the immediately preceding office action response, is not persuasive.

In the Advisory Action mailed 10/12/2006, the Examiner makes the new arguments which are next addressed by Appellants.

In the Advisory Action mailed 10/12/2006, the Examiner argues: “In response to Applicant's argument that the invention has utility as the liquid adhesive uses surface tension to hold the sheets of material together (Applicant's response, page 10, lines 1 — 5), it is still unclear how the liquid adhesive functions to hold the sheets together.”

In response, Appellants reiterate that Appellants' specification, page 11, cols. 13-16 teaches that surface tension of the liquid adhesive hold the sheets together, by reciting that “the removable adhesive 16A-16K may comprise a thin layer of water. The **surface tension** of the thin layer of water between each sheet 14A-14L of the laminated structure 10A holds the laminated structure 10A together while the hole 102 is drilled.” (emphasis added).

In the Advisory Action mailed 10/12/2006, the Examiner argues: “Even though it states that water tension holds the sheets together, the specification still fails to show how the adhesive functions as a liquid and how the adhesive stays in place between the sheets. What prevents the liquid, water, from soaking through the layers of sheets and loosing its adhesive characteristics?”. Even if the sheets are soaked with the liquid adhesive, how is the film formed to cause surface tension between the layers? The specification has no teaching of the sheets of not absorbing liquid adhesive. If the sheets absorb all the liquid adhesive, water, what keeps the sheets from disintegrating when under going the drilling process? The specification also has no teaching with regard to how much of the liquid adhesive would be absorbed by the sheets.”

In response, Appellants assert that the specification inherently teaches that the liquid adhesive does not soak through the layers of sheets to lose its adhesive characteristics while the sheets are drilled, because the specification, page 11, cols. 13-16 explicitly recites that “the



removable adhesive 16A-16K may comprise a thin layer of water. The surface tension of the thin layer of water between each sheet 14A-14L of the laminated structure 10A holds the laminated structure 10A together while the hole 102 is drilled.” (emphasis added).

In other words, it is inherently taught in the preceding citation from the specification, page 11, cols. 13-16 that the liquid adhesive does not soak through the layers of sheets to lose its adhesive characteristics while the sheets are drilled.

For enablement of the aforementioned inherency of the liquid adhesive not soaking through the layers of sheets to lose its adhesive characteristics while the sheets are drilled, the specification, page 5, lines 6-8 indicates that the sheets may comprise “copper, invar, copper-invar-copper, etc.” which is or can be configured to be non-porous as supported in the following examples.

As a first example, see “<http://www.soupcan.com/copperfaq.html>” which recites: “Because copper is a metal, it is non-porous”.

As a second example, see U.S. Patent 4,159,509 (issued June 26, 1979 to Walters), which recites in col. 4, lines 60-63: “The cathode case 15 of the cathode electrode 14 is of a non-porous metal of either silver or copper or a non-porous metal alloy of either an alloy of silver or copper.”

As a third example, see U.S. Patent 6,605,368 (issued August 12, 2003 to Smith), which recites in the Abstract “The invention relates to an improved cookware vessel and a method of manufacturing the same. The cookware vessel comprises an inner core body of a foamable metal, and an outer shell surface of a non-porous metal”. U.S. Patent 4,159,509 recites in claims 1 and 4: “A cooking vessel comprising: a non-porous shell material ... wherein said non-porous shell material is selected from the group consisting of stainless steel, aluminum, cast iron, and

copper.”

As a fourth example, see U.S. Patent 6,730,851 (issued May 4, 2004 to Ladie et al), which recites in col. 2, lines 50-54: “a non-porous metal laminate impervious to said infiltration. In particular, the metal is stainless steel, copper, copper alloy, or superalloys”.

As explained in the preceding discussion, Appellants’ specification discloses that the sheets may comprise “copper, invar, copper-invar-copper, etc.” which are metals that are or can be configured to be non-porous. Accordingly, Appellants respectively assert that use of the aforementioned materials for the sheets, provides enablement for the inherent teaching that the liquid adhesive does not soak through the layers of sheets to lose its adhesive characteristics while the sheets are drilled.

In summary, the present invention has the utility of preventing sheet separation as the drill passes through the stack and preventing burr formation as the drill passes through the stack, in contrast with the prior art. The present invention achieves these advantages by having sheets in the stack adhesively coupled to each other by an adhesive layer consisting of a removable adhesive. The specification teaches that in one embodiment, the removable adhesive consists of a liquid. The specification further teaches that the sheets may comprise “copper, invar, copper-invar-copper, etc.” which are metals that are or can be configured to be non-porous, which is consistent with the liquid adhesive not soaking through the layers of sheets to lose its adhesive characteristics while the sheets are drilled. Moreover, there is no disclosure anywhere in the specification suggesting that the liquid adhesive may soak through the layers of sheets to lose its adhesive characteristics while the sheets are drilled. Accordingly, Appellants respectfully

contend that claims 4 and 17 do not lack utility.

Based on the preceding arguments, Appellants respectfully contend that claims 4 and 17 are not unpatentable for lack of utility under 35 U.S.C. § 101. Since claims 2-13, 32, and 34-37 depend from claim 4, Appellants respectfully contend that claims 2-13, 32, and 34-37 are likewise not unpatentable for lack of utility under 35 U.S.C. § 101. Since claims 40-43 depend from claim 4, Appellants respectfully contend that claims 40-43 are likewise not unpatentable for lack of utility under 35 U.S.C. § 101.

## **GROUND OF REJECTION 2**

Claims 2-13, 17, 32, 34-37 and 40-43 stand rejected under 35 U.S.C. § 112, first paragraph.

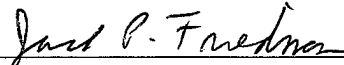
The Examiner argues: “Claims 2 – 13, 17, 32, 34 – 37 and 40 – 43 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.”

In response, Appellants assert that Appellants have presented arguments *supra*, with respect to the rejection of claims 2-13, 17, 32, 34-37 and 40-43 under 35 U.S.C. § 101, in support of Appellants contention that claims 2-13, 17, 32, 34-37 and 40-43 are not unpatentable for lack of utility under 35 U.S.C. § 101. Therefore, since the foundation for the rejection of claims 2-13, 17, 32, 34-37 and 40-43 under 35 U.S.C. § 112, first paragraph is lack of utility, Appellants respectfully contend that 2-13, 17, 32, 34-37 and 40-43 are not unpatentable under 35 U.S.C. § 112, first paragraph.

SUMMARY

In summary, Appellant respectfully requests reversal of the August 3, 2006 Office Action rejection of claims 2-13, 17, 32, 34-37 and 40-43.

Respectfully submitted,



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**APPENDIX A - CLAIMS ON APPEAL**

2. The structure of claim 4, wherein the sheets each consist of a material selected from the group consisting of copper, invar, copper-invar-copper, aluminum, and molybdenum.

3. The structure of claim 4, wherein the removable adhesive consists of a material selected from the group consisting of fructose, sucrose, water, and a water solution.

4. A structure, comprising:

a stack of two or more sheets, wherein successive sheets in each pair of successive sheets of the stack are adhesively coupled to each other by an adhesive layer consisting of a removable adhesive, wherein the adhesive layer is in direct mechanical contact with the successive sheets in each pair, and wherein the removable adhesive is also disposed on top and bottom surfaces of the stack, and wherein the removable adhesive consists of a liquid while adhesively coupling the successive sheets to each other;

a first surface of a first layer coupled with the removable adhesive to a first surface of the

stack; and

a first surface of a second layer coupled with the removable adhesive to a second surface of the stack, wherein the first and second layers are adapted to prevent burr formation in a hole subsequently drilled through the stack.

5. The structure of claim 4, further including:

a first surface of a first foil layer contacting a second surface of the first layer, wherein the first foil layer consists of a first foil; and

a first surface of a second foil layer contacting a second surface of the second layer, wherein the second foil layer consists of a second foil.

6. The structure of claim 5, further including:

a first surface of a first plate contacting a second surface of the first foil; and

a first surface of a second plate contacting a second surface of the second foil.

7. The structure of claim 6, further including:

a first surface of a third plate contacting a second surface of the first plate; and

a first surface of the fourth plate contacting a second surface of the second plate.

8. The structure of claim 7, further including:

a first blotter pad comprising at least one blotter sheet;

a first surface of the first blotter pad contacting a second surface of the third plate;

a second blotter pad comprising at least one blotter sheet; and

a first surface of the second blotter pad contacting a second surface of the fourth plate.

9. The structure of claim 8, further including:

a first surface of a fifth plate contacting a second surface of the first blotter pad; and

a first surface of a sixth plate contacting a second surface of the second blotter pad.

10. The structure of claim 5, wherein the first and second layer comprises a material selected from the group consisting of impregnated and laminated epoxy/glass, phenolic/paper laminate, and aluminum.

11. The structure of claim 6, wherein the first and second foil comprises copper.

12. The structure of claim 8 wherein the first and second blotter sheet comprises paper.

13. The structure of claim 9, wherein the fifth and sixth plate comprises stainless steel.

17. A structure, comprising:

a plurality of stacks, wherein each stack and its adjacent stack of the plurality of stacks are both coupled with a removable adhesive to an intermediate layer therebetween, wherein each intermediate layer is adapted to prevent burr formation in a hole subsequently drilled through the stack, wherein each stack comprises a plurality of sheets such that each sheet and its adjacent sheet of the plurality of sheets are adhesively coupled to each other with an adhesive layer consisting of the removable adhesive, wherein the adhesive layer is in direct mechanical contact with said each sheet and its adjacent sheet, and wherein the removable adhesive consists of a liquid while adhesively coupling said each sheet with its adjacent sheet.

32. The structure of claim 4, wherein a continuous opening extends through the stack, the first



layer, and the second layer.

34. The structure of claim 9, further including:

a first pressure head contacting a second surface of the fifth plate; and

a second pressure head contacting a second surface of the sixth plate.

35. The structure of claim 34, wherein a compressive force is acting upon the stack, the first layer, the second layer, the first foil, the second foil, the first plate, the second plate, the third plate, the fourth plate, the first bladder pad, the second bladder pad, the fifth plate, and the sixth plate, and wherein the compressive force is being provided by the first and second pressure heads.

36. The structure of claim 35, wherein the stack, the first layer, the second layer, the first foil, the second foil, the first plate, the second plate, the third plate, the fourth plate, the first bladder pad, the second bladder pad, the fifth plate, and the sixth plate are at an elevated temperature.

37. The structure of claim 36, wherein the elevated temperature is in a range of 50 °F to 200 °F.

40. The structure of claim 17, wherein the sheets each consist of a material selected from the group consisting of copper, invar, copper-invar-copper, aluminum, and molybdenum.

41. The structure of claim 17, wherein the removable adhesive, while adhesively coupling said each sheet with its adjacent sheet, consists of a material selected from the group consisting of water and a water solution.

42. The structure of claim 17, wherein the removable adhesive, while adhesively coupling said

each sheet with its adjacent sheet, consists of a material selected from the group consisting of fructose and sucrose.

43. The structure of claim 4, wherein the removable adhesive consists of a material selected from the group consisting of fructose and sucrose.

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**APPENDIX B - EVIDENCE**

There is no evidence entered by the Examiner and relied upon by Appellant in this appeal.

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**APPENDIX C - RELATED PROCEEDINGS**

There are no proceedings identified in the "Related Appeals and Interferences" section.